TECHNICAL MANUAL OPERATOR'S AND UNIT MAINTENANCE MANUAL INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST

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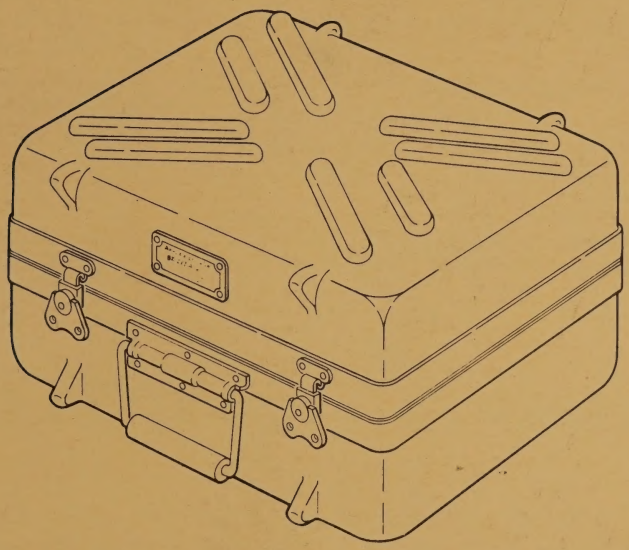

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ANALOG SIMPLE DATA INTERFACE SET BZ-277A/G

(NSN 5895-01-259-9236)

HEADQUARTERS, DEPARTMENT OF THE ARMY

1 NOVEMBER 1987

WARNING

DANGEROUS VOLTAGE

is used in the operation of this equipment

DEATH ON CONTACT

may result if personnel fail to observe safety precautions

Never work on electronic equipment unless there is another person nearby who is familiar with the operation and hazards of the equipment and who is competent in administering first aid. When technicians are aided by operators, they must be warned about dangerous areas.

The power supply to the equipment must be shut off before beginning work on the equipment.

Be careful not to contact high-voltage connections when installing or operating this equipment.

Keep one hand away from the equipment to reduce the hazard of current flowing through vital organs of the body.

Do not be misled by the term "low voltage". Wattage/voltage as low as 50 volts may cause death under adverse conditions.

WARNING

Turn off power to prevent shock hazard to personnel.

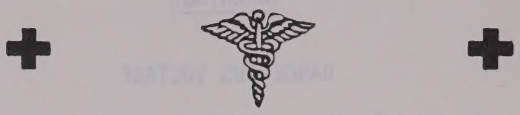
WARNING

Do not remove equipment covers. Voltages are contained inside which can cause serious injury.

WARNING

If a fuse continues to blow, do not attempt to replace it. That could create an overload situation hazardous to personnel and equipment. Correct situation before attempting to replace fuse.

For First Aid refer to FM21-11.



5 SAFETY STEPS TO FOLLOW IF SOMEONE IS THE VICTIM OF ELECTRICAL SHOCK

1. DO NOT TRY TO PULL OR GRAB THE INDIVIDUAL

2. IF POSSIBLE, TURN OFF THE ELECTRICAL POWER

3. IF YOU CANNOT TURN OFF THE ELECTRICAL POWER, PULL, PUSH, OR LIFT THE PERSON TO SAFETY USING A WOODEN POLE OR A ROPE OR SOME OTHER INSULATING MATERIAL

4. SEND FOR HELP AS SOON AS POSSIBLE

5. AFTER THE INJURED PERSON IS FREE OF CONTACT WITH THE SOURCE OF ELECTRICAL SHOCK, MOVE THE PERSON A SHORT DISTANCE AWAY AND IMMEDIATELY START ARTIFICAL RESUSCITATION

HOW TO USE THIS MANUAL

LOCATE THE INFORMATION YOU NEED.

To help you locate the information you need, a main table of contents and several types of indexes are provided.

Table of contents. Each volume has a table of contents for the complete manual. This table of contents lists major topic areas by chapter.

To assist you in locating specific information, several types of indexes are used within the volumes.

Front cover index. Major subjects in a volume are listed in a black box on the right side of the front cover. Each subject listed lines up with a page edge marked in black.

To use this index, find the subject and turn to the black-edged page it lines up with.

Chapter index. An index is located at the beginning of each chapter. This index lists the information in the chapter by section and paragraph number.

Section and paragraph indexes. Special indexes are provided in some sections and paragraphs. These indexes will help you find the exact item you're looking for, such as a specific diagnostic command or supervisor-initiated test.

Alphabetical index. An alphabetical index is provided at the back of each volume. Important items are listed under those names most likely to be used. For example, VDU Operation will also be listed as Operation, VDU.

READ THE INTRODUCTORY MATERIAL.

Read the introductory material at the beginning of each chapter, section or paragraph you are using. It has important information and will help you perform your task or carry out your assignment.

FOLLOW THE PROCEDURE STEPS.

In most cases, the procedures in this manual should be done from left to right. Do the steps in order. Look at drawing. Follow the instructions. Continue until all the procedures are finished.

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Technical Manual
No. 11-5895-1388-12&P

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 1 November 1987

OPERATOR'S AND UNIT MAINTENANCE MANUAL INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST FOR ANALOG SIMPLE DATA INTERFACE SET BZ-277A/G (NSN 5895-01-259-9236)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in back of this manual direct to: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-ME-MP, Fort Monmouth, New Jersey 07703-5000. A reply will be furnished direct to you.

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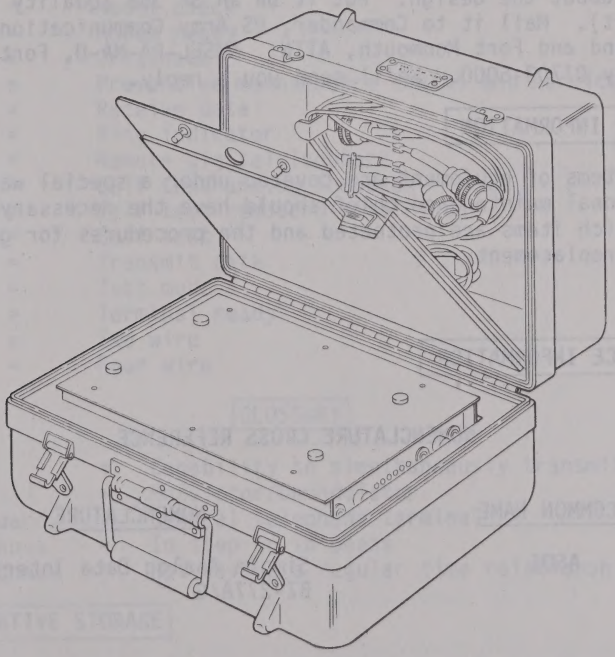
CHAPTER 1
INTRODUCTION

SECTION I. GENERAL INFORMATION

1-1. SCOPE

This technical manual covers descriptive information, operating procedures and organizational maintenance procedures for Analog Simple Data Interface Set BZ-277A/G.



1-2. MAINTENANCE FORMS, RECORDS AND REPORTS

a. *Reports of Maintenance and Unsatisfactory Equipment.* Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA Pam 738-750, as contained in Maintenance

Management Update. Consolidated Index of Army Publications and Blank Forms. Refer to the latest issue of DA Pam 25-30 to determine whether there are new editions, changes or additional publications pertaining to the equipment.

b. *Report of Packaging and Handling Deficiencies.* Fill out and forward SF 364 (Report of Discrepancy (ROD)) as prescribed in AR 735-11-2/ DLAR 4140.55/NAVMATINST 4355.73B/AFR 400-54/MCO 4430.3H.

c. *Discrepancy in Shipment Report (DISREP) (SF 361).* Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 55-38/NAVSUPINST 4610.33C/AFR 75-18/MCO P4610.19D/DLAR 4500.15.

1-3. REPORTING OF EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

If your equipment needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about the design. Put it on an SF 368 (Quality Deficiency Report). Mail it to Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-PA-MA-D, Fort Monmouth, New Jersey 07703-5000. We'll send you a reply.

1-4. WARRANTY INFORMATION

Certain items of equipment are covered under a special warranty. Your C-E organizational maintenance chief should have the necessary information for identifying which items are protected and the procedures for getting warranty repair and/or replacement.

1-5. REFERENCE INFORMATION

NOMENCLATURE CROSS REFERENCE

COMMON NAME	NOMENCLATURE
ASDI	Simple Analog Data Interface Set BZ-277A/G

LIST OF ABBREVIATIONS

AC/CB	=	Switchboard provides AC supervision and common battery power
AL	=	Analog loopback
ANS	=	Answer
bps	=	Bits per second
CB	=	Common battery
DC/CB	=	Switchboard provides AC or DC supervision and common battery power
DC/LB	=	Switchboard provides DC supervision. Battery power is supplied by Telephone Set TA-838/TT or TA-838A/TT local battery (LB).
DL	=	Digital loopback
HI	=	High speed
LB	=	Local battery
LO	=	Low speed
MB	=	Make busy
MC	=	Modem check
MR	=	Modem ready
ORIG	=	Originate
PMCS	=	Preventive maintenance checks and services
RD	=	Receive data
RI	=	Ring indicator
RL	=	Remote digital loopback
SAL	=	Self test analog loopback
SRL	=	Self test remote digital loop
ST	=	Self test
TD	=	Transmit data
TM	=	Test mode
TR	=	Terminal ready
2W	=	Two wire
4W	=	Four wire

GLOSSARY

Duplex	=	Capability to simultaneously transmit and receive
Modem	=	Modulator/Demodulator
Switchboard	=	Central telephone terminal
Synchronous	=	In step or in phase
Asynchronous	=	Not having a regular time relationship

1-6. ADMINISTRATIVE STORAGE

Administrative storage of equipment issued to and used by Army activities will have preventive maintenance performed in accordance with the PMCS charts before storing. When removing the equipment from administrative storage the PMCS should be performed to assure operational readiness. Disassembly and repacking of equipment for shipment or limited storage are covered in paragraphs 3-14 and 3-15.

1-7. DESTRUCTION OF ARMY ELECTRONICS MATERIEL

Destruction of Army electronics materiel to prevent enemy use shall be in accordance with TM 750-244-2.

SECTION II. EQUIPMENT DESCRIPTION AND DATA

1-8. PURPOSE

The ASDI provides a passive interface for voice or data communication over switched analog telephone trunks and lines.

The ASDI is capable of interfacing with AN/TTC-39 Circuit Switch, SB-3614/AT Automatic Switchboard, TA-838/TT, TA-838A/TT and TT-341 Telephone Sets, MD-674, MD-700, MD-701 and TH-22 Modems, KG-84(DLED) and KW-7 Crypto devices.

1-9. CHARACTERISTICS, CAPABILITIES AND FEATURES

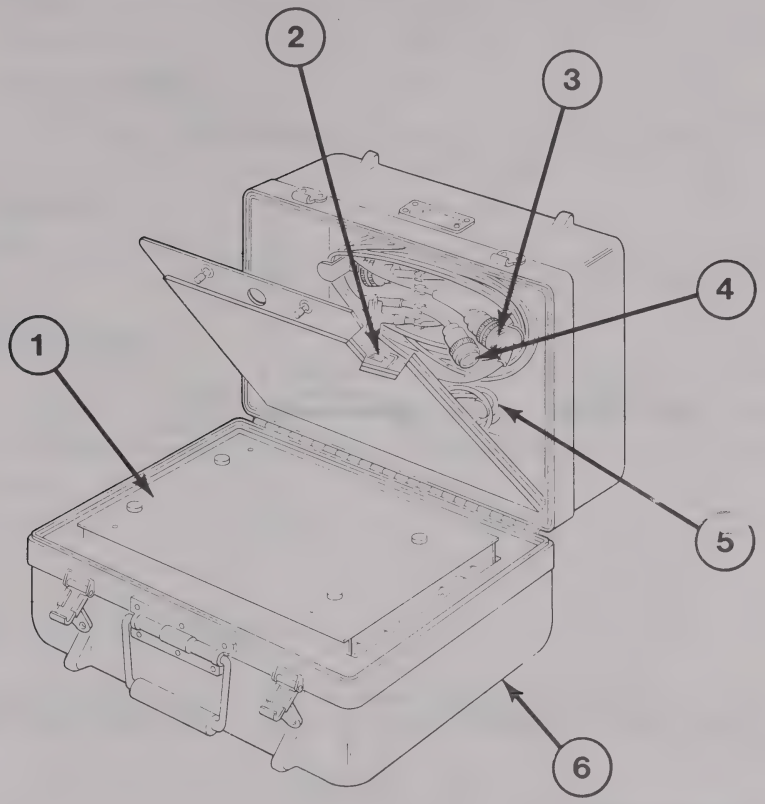
CHARACTERISTICS

- Portable
- Maintenance free
- For use with switched telephone network

CAPABILITIES AND FEATURES

- Self-contained 2-wire or 4-wire duplexed modem
- Self diagnostics
- Compact
- Data rates of 0-300 bps asynchronous and 1200 bps synchronous/asynchronous

1-10. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS



(1) **ASDI.** Contains all interface connectors, internal modem and front panel controls and indicators.

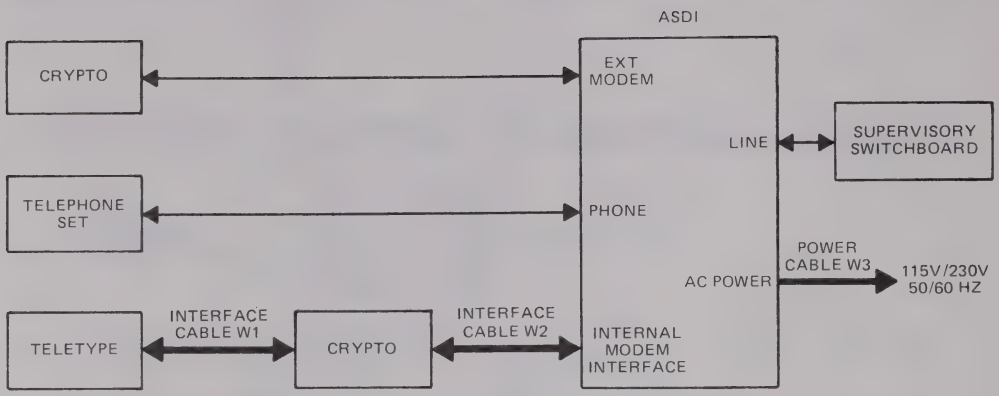
(2) **TM 11-5895-1388-12&P.** Provides all instructions for installing, operating and maintaining the ASDI.

(3) **INTERFACE CABLE W1.** A multiconductor cable that interconnects AN/UGC-74 or AN/FGC-25 Teletype and KG-84(DLED) or KW-7 Crypto equipment.

(4) **INTERFACE CABLE W2.** A multiconductor cable that interconnects KG-84(DLED) or KW-7 Crypto to the ASDI INT DATA MODEM INTERFACE connector.

(5) **POWER CABLE W3.** Connects the ASDI to 115/230V power source.

(6) **TRANSIT CASE.** Provides protection for the ASDI, interface cables and technical manual during storage and shipping.



The ASDI provides a passive interface for voice or data communication over switched analog telephone lines and trunks. The ASDI contains an internal modem.

1-11. EQUIPMENT DATA

Data transmission rates	0-300 bps asynchronous; 1200 bps asynchronous/synchronous
Modulation	FSK @ 0-300 bps PSK @ 1200 bps
Operating modes	DC/CB; AC/CB, DC/LB; external modem, voice; internal modem in two or four wire network
Telephone set compatibility	TA-838/TT; TA-838A/TT; TA-341; TA-312; TA-938
Switchboard compatibility	AN/TTC-39; SB-3614/TA
Crypto compatibility	KG-84A (DLED); KW-7

Electrical

Voltage	115/230 single phase
Frequency	50/60 Hz
Power consumption	10W

Mechanical (less transit case)

Height	3-5/8 inches
Depth	14 inches
Width	11 inches
Weight	10 pounds
Mounting	Bench mounted
Cable length	72 inches each

Transit case

Height	8 inches
Depth	16 inches
Width	17-1/2 inches
Weight	10 pounds

1-12. SAFETY CARE AND HANDLING

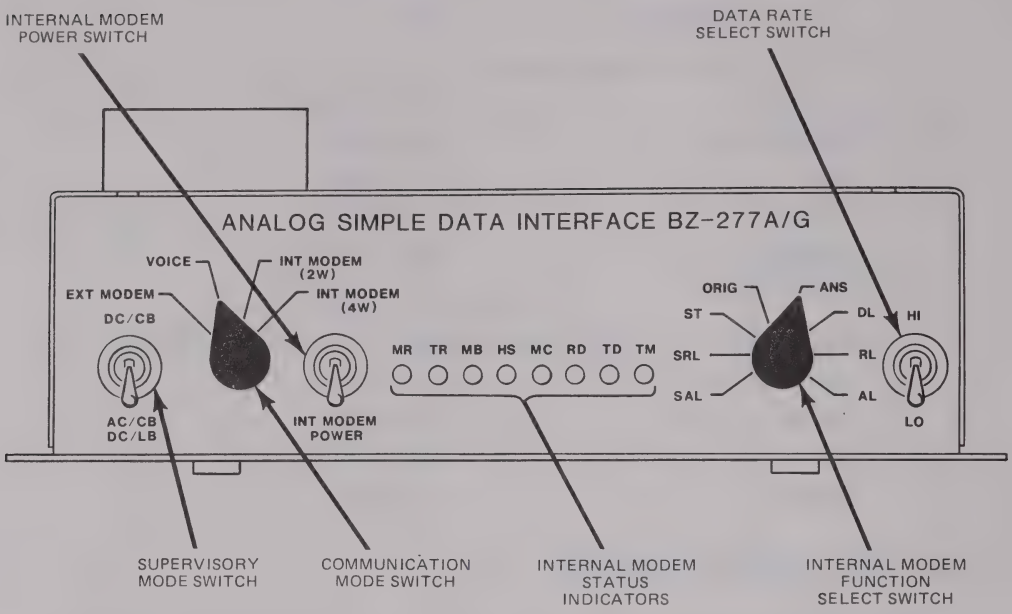
Observe the following:

WARNING

Dangerous voltages that can cause serious personal injury are located inside the ASDI. Never open the ASDI.

- Operate all controls using a firm and positive movement.
- Do not allow moisture spills to come in contact with the ASDI.
- Do not put excessive strain on cables and wires connected to the ASDI.
- Always keep the ASDI clean and free of clutter.

SECTION III. PRINCIPLES OF OPERATION



SUPERVISORY MODE SWITCH - is used to configure the ASDI to the type of supervisory power the switchboard and telephone sets are configured for.

COMMUNICATION MODE SWITCH - is used to configure the ASDI for the type of communication required. Choices are voice and data through internal or external modem in 4-wire or 2-wire configuration.

INTERNAL MODEM POWER SWITCH - when set to the ON position, power is applied to the ASDI internal modem which is required only when communication mode switch is in either of the INT MODEM positions.

INTERNAL MODEM STATUS INDICATORS - displays the function that the ASDI modem is configured for and also the operation the ASDI modem is performing.

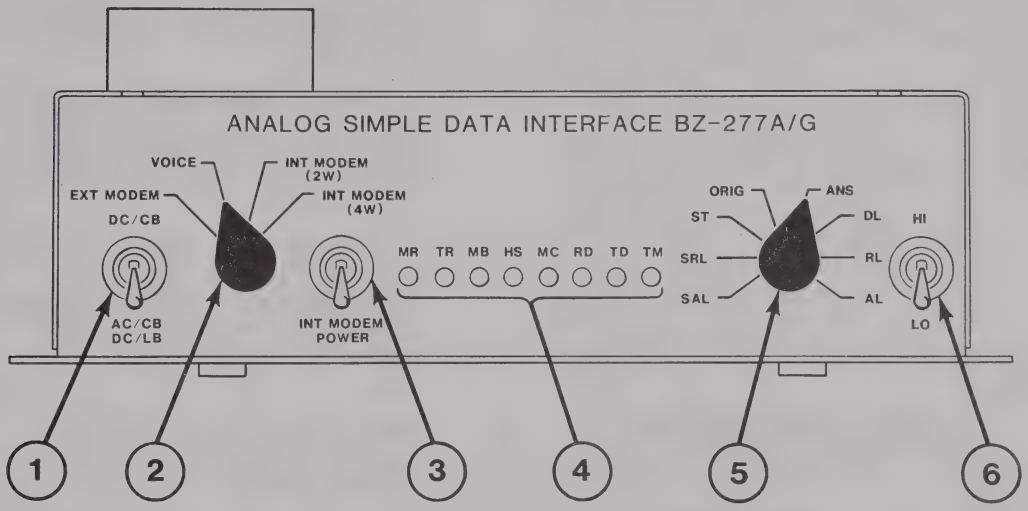
INTERNAL MODEM FUNCTION SELECT SWITCH - selects the function of the ASDI modem.

DATA RATE SELECT SWITCH - selects high speed (HI) or low speed (LO) data rates.

CHAPTER 2
OPERATING INSTRUCTIONS

SECTION I. DESCRIPTION AND USE OF OPERATOR CONTROLS AND INDICATORS

2-1. FRONT PANEL CONTROLS AND INDICATORS



Key	Control or Indicator	Function
(1)	Supervisory Mode Switch	Sets ASDI to the type of supervisory power the switchboard and telephone sets need. The switchboard provides DC power supervision and common battery (CB) power, when set to DC/CB. When the switchboard provides AC power supervision and telephone battery is supplied by the telephone set,

Key	Control or Indicator	Function
		the supervisory mode switch is set to AC/CB, DC/LB.
(2)	Communication Mode Switch	Sets the ASDI mode of communication. The EXT MODEM position is used when data is to be communicated and a 2-wire or 4-wire external modem is to be utilized. The VOICE position is used when normal voice is to be communicated. The INT MODEM (2W) is used when data is to be communicated over a 2-wire telephone system and the ASDI internal modem is to be utilized. The INT MODEM (4W) position is used when data is to be communicated over a 4-wire telephone system and the ASDI internal modem is to be utilized.
(3)	INT MODEM POWER	When set to the up position, applies AC power to the ASDI internal modem.
(4)	Internal Modem Status Indicators	These lamps display the function that the ASDI modem is configured for and also the operation that the ASDI modem is performing. MR (modem ready) lamp lights when INT MODEM POWER switch is set to the up (on) position to indicate that the ASDI internal Modem is Ready. TR (terminal ready) lamp lights to indicate that the data

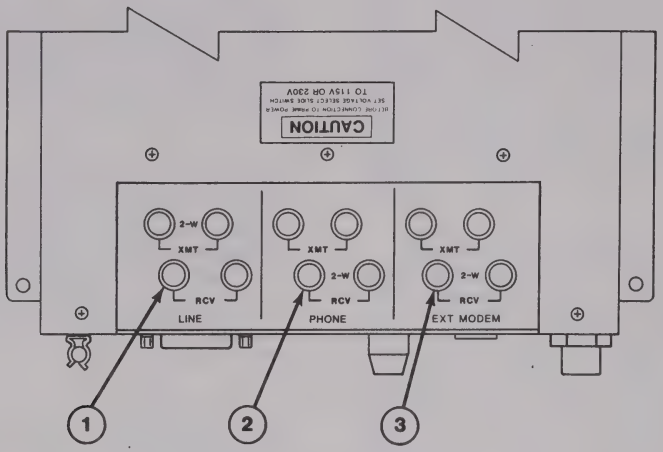
Key	Control or Indicator	Function
		input device is ready to supply data. MB (make busy) lamp lights when internal modem function select switch is set to AL (analog loopback) to indicate that the ASDI internal modem is busy. HS (high speed) lamp lights when the data rate select switch is set to HI and the modem is operating at a high speed (1200 bps) data rate. MC (modem check) lamp lights when INTERNAL MODEM switch is initially set to the ON position and remains lit for about 10 seconds. When the MC lamp goes out the ASDI internal modem has completed its power on self check. The MC lamp also lights when errors are detected during a self test of the ASDI internal modem. RD (receive data) flashes to indicate that the ASDI is in the process of receiving data. TD (transmit data) flashes to indicate that the ASDI is in the process of transmitting data. TM (test mode) lights when the internal modem function select switch is set to any of the self test function positions (SAL, SRL, ST, DL, RL or AL).
(5)	Internal Modem Function Select Switch	This switch selects the mode of operation of the ASDI internal modem. SAL (self test analog loop-back) position puts the modem

Key	Control or Indicator	Function
		into the analog loopback test mode with the transmitter connected to the receiver circuits. This test mode does not involve a second modem and terminal equipment is isolated from the ASDI. Transmit data is internally generated and receive data is monitored for errors. When an error is detected, internal modem status indicator MC will flash or light. SRL (self test remote digital loopback) position puts the modem into remote digital loopback mode. High-speed test data is generated internally and transmitted to a remote ASDI. Returned data from the remote ASDI is monitored by the modem receiver. When an error is detected, modem status indicator MC lamp will flash or light. ST (self test) position puts the modem in the end-to-end self test mode in conjunction with a remote ASDI. When an error is detected, modem status indicator MC lamp will flash or light. ORIG (originate) position used when you are the call originator for voice or data communication. After communication connection has been established, the ASDI will operate in duplex. ANS (answer) position (normal position) is used when you are the receiver of a call. After communication connection has been established, the ASDI will operate in duplex.

Key	Control or Indicator	Function
		DL (digital loopback) position puts the modem in the digital loopback mode with a remote ASDI. Terminal data is transmitted from the remote ASDI. The data is received and transmitted back (echoed) to the remote ASDI and the originating terminal. RL (remote digital loopback) position puts the modem in the remote digital loopback mode. Terminal high-speed data is transmitted to a remote ASDI. The data is received by the remote ASDI and transmitted back (echoed) to the originating ASDI and terminal. AL (analog loopback) position puts the modem in a self-test analog loopback mode with the local terminal. Analog data that is transmitted by the terminal will be processed by the modem and returned to the terminal as received data.
(6)	Data Rate Select Switch	The data rate select switch configures the ASDI internal modem transmit/receive circuits for high (HI) speed or low (LO) speed data rate. In the HI position, the ASDI will operate at a data rate of 1200 bits per second. In the LO position, the ASDI will operate at data rates between 0 and 300 bits per second.

2-2. INTERFACE PANEL BINDING POSTS

The information that follows gives description and use of the ASDI binding posts.



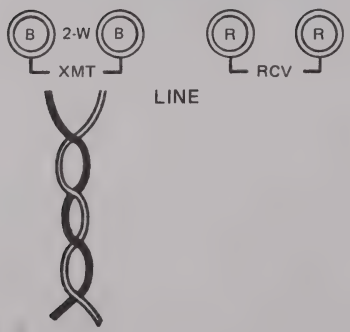
NOTE

All XMT (transmit) binding posts are color coded black (Ⓑ denotes black).

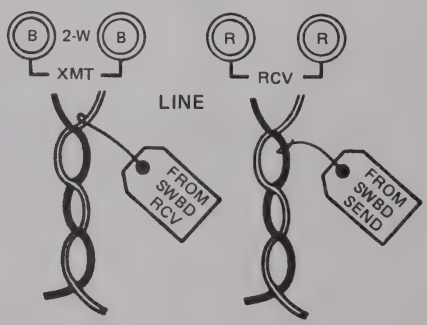
All RCV (receive) binding posts are color coded red (Ⓡ denotes red).

Key	Binding Post	Function
①	LINE, XMT/RCV	Connects the ASDI to the switchboard in 2- or 4-wire configuration.

2-WIRE

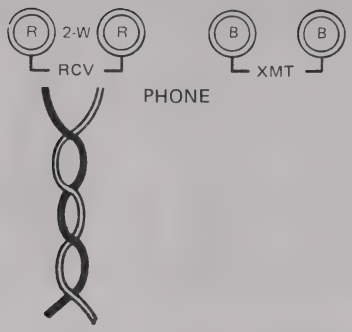


4-WIRE

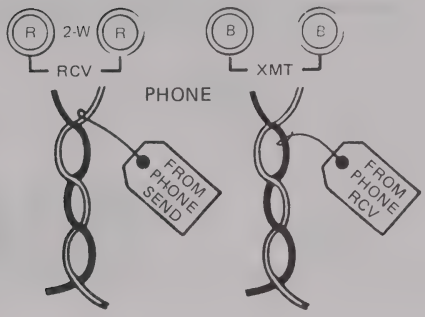


Key	Binding Post	Function
(2)	PHONE, XMT/RCV	Connects the ASDI to the telephone set in 2- or 4-wire configuration.

2-WIRE

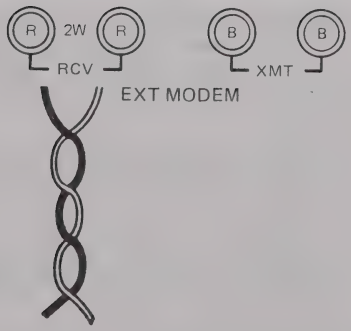


4-WIRE

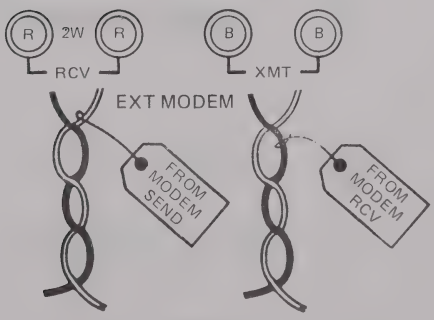


(3)	EXT MODEM	Connects the ASDI to the crypto devices in 2- or 4-wire configuration when an external modem is to be utilized.

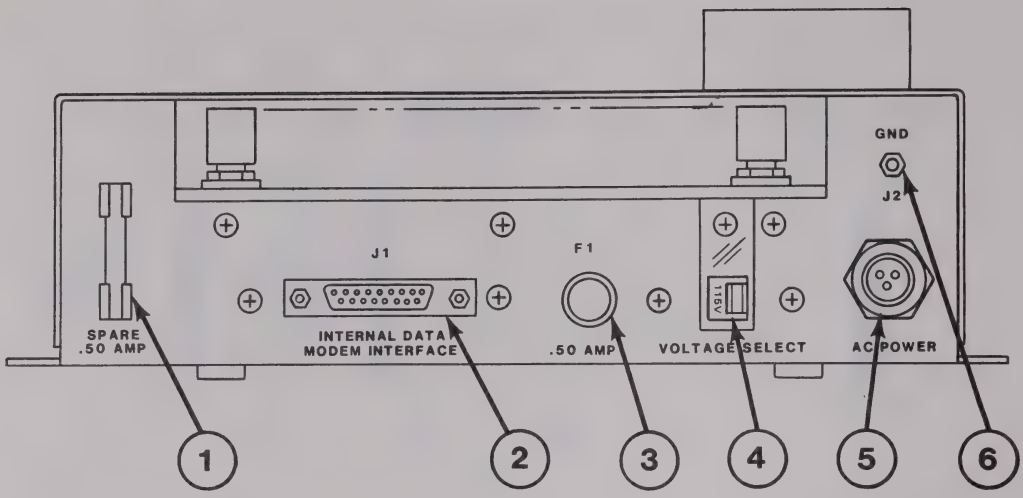
2-WIRE



4-WIRE



2-3. REAR PANEL CONTROLS AND INDICATORS

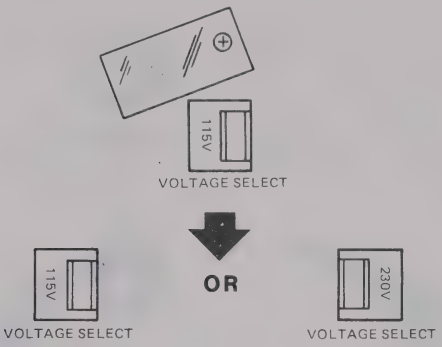


Key	Control or Indicator	Function
(1)	.50 AMP spare fuse	Replacement fuse for key item 3.
(2)	INTERNAL DATA MODEM INTERFACE	Provides connection of teletype or crypto data sending devices via interface cable W2P2 when internal data modem is to be used.
(3)	.50 AMP fuse	Provides current overload protection for the ASDI external power source.
(4)	VOLTAGE SELECT switch	A slide switch that configures the ASDI for 115V or 230V prime power source input.
(5)	AC POWER connector	A multi-pin connector for connecting the ASDI to the 115V or 230V prime power source via cable assembly W3.
(6)	GND terminal	Connects the ASDI to system ground

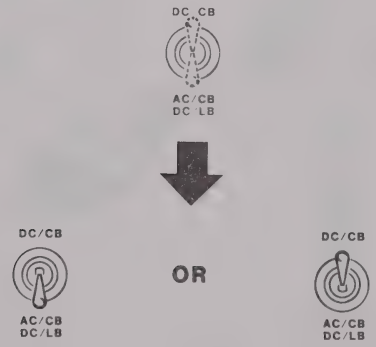
SECTION II. OPERATION UNDER USUAL CONDITIONS

2-4. PREPARATION FOR USE

STEP (1) Turn off power. Determine if power source is 115V or 230V. At ASDI rear panel, loosen clear plastic protective cover over VOLTAGE SELECT switch and swing cover to gain access to the switch. Set VOLTAGE SELECT switch to correct position. Slide to the left for 230V and to the right for 115V. Secure protective cover.



STEP (2) Determine the type of supervisory switchboard power (AC or DC). Decide if the switchboard does or does not provide common battery power. Set the supervisory mode switch to the correct position.



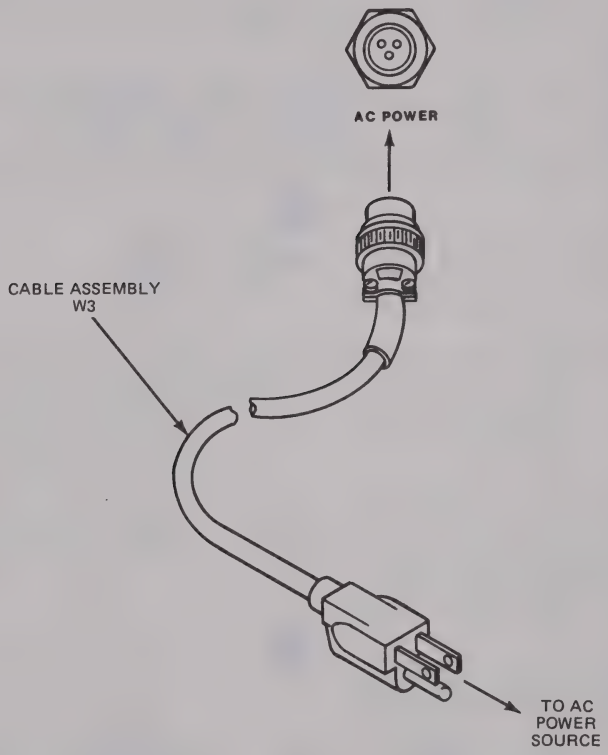
Push DOWN for supervisory AC and common battery power supplied by the telephone set. Telephone set in DC/LB mode.

Push UP for supervisory DC power and common battery power. Telephone set in DC/LB mode.

NOTE

Depending upon your location, an adapter may be needed for cable W3 when connecting the ASDI to 230V prime power.

STEP (3) Place the ASDI on a desk or bench top. Connect the ASDI AC POWER connector to a 115V/230V, 50-60 Hz power source using cable assembly W3, with adapter when necessary. Cable W3 is located in the cover of the ASDI transit case.



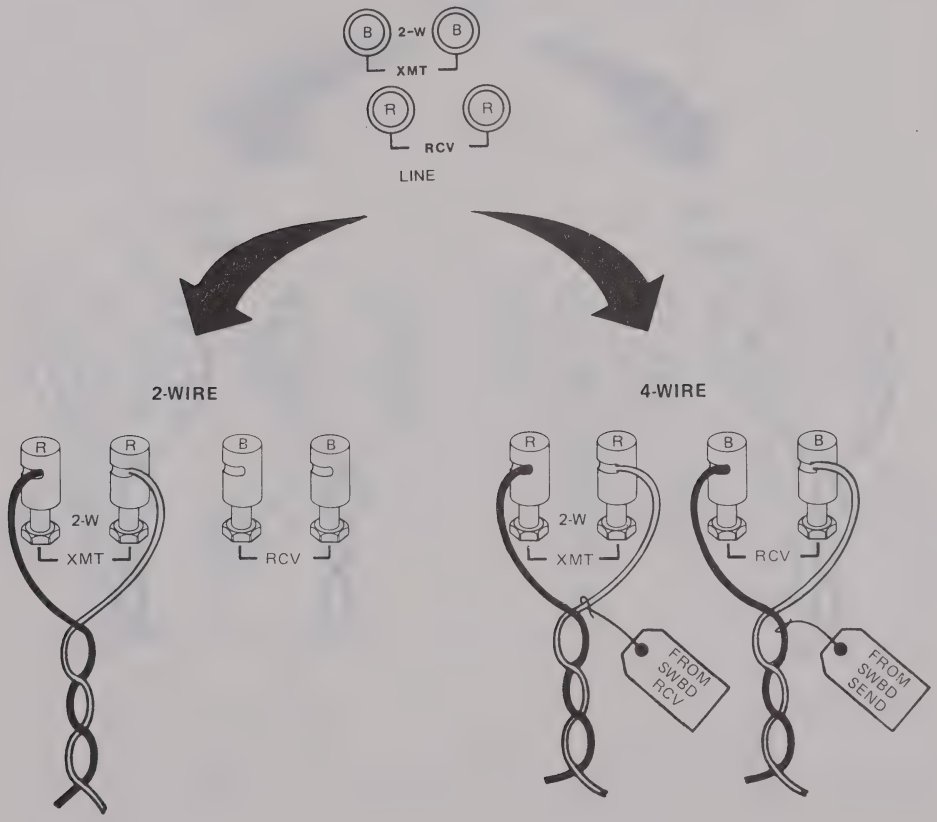
NOTE

Wires to be connected to the ASDI will be tagged or color coded. Make connections as shown in the illustrations placed with the instructions.

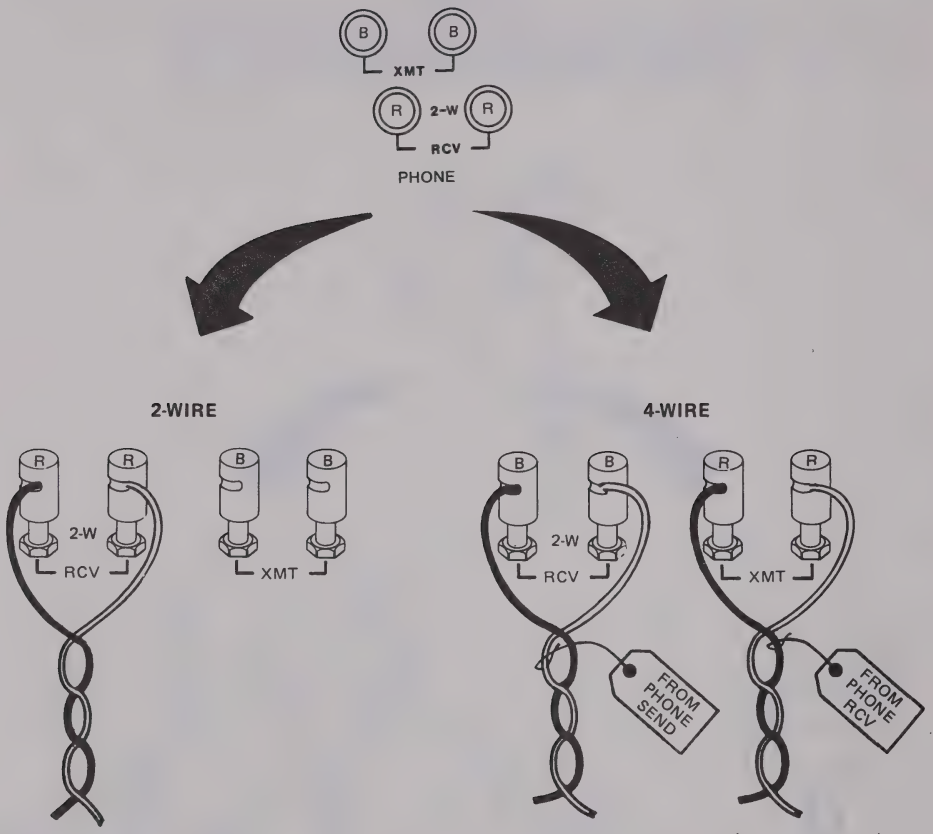
STEP (4) Determine if the telephone system is a 2-wire or 4-wire system. Connect the switchboard to the LINE binding posts. Depress binding post until its slot is visible and place wire into slot. Release binding post.

CAUTION

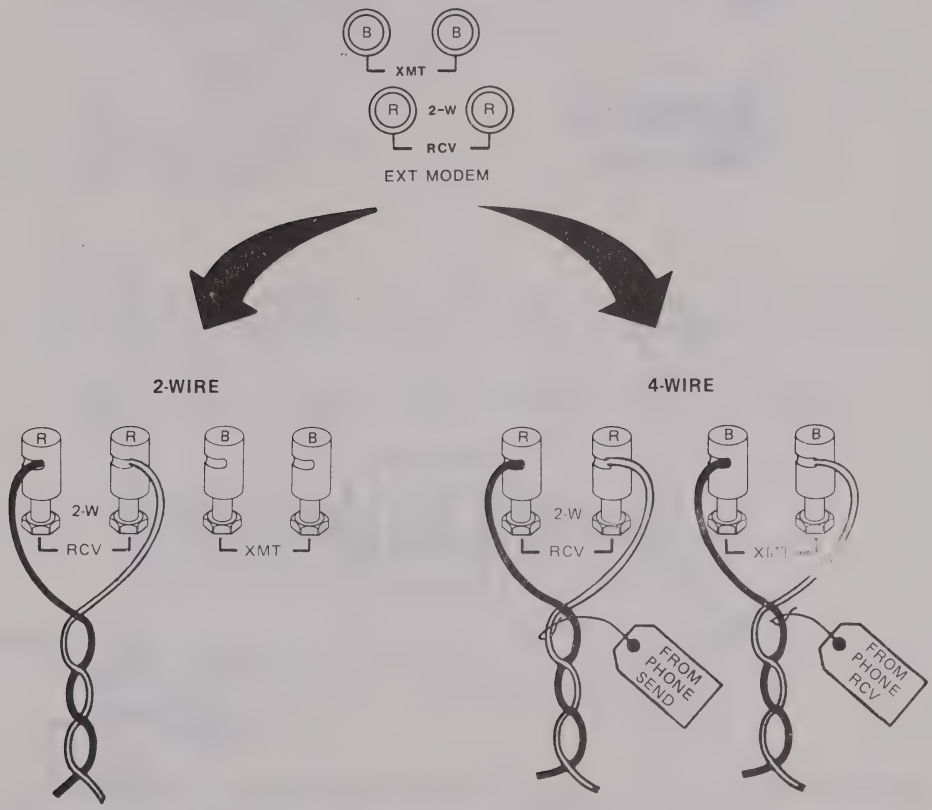
Do not attempt to make any 4-wire connections if the wires are not clearly identified.



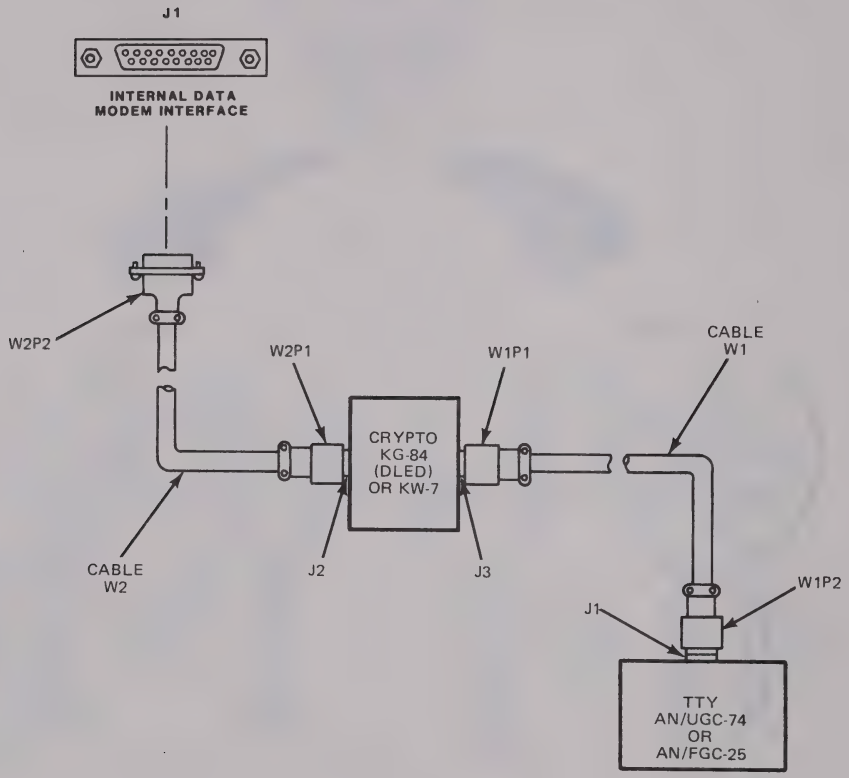
STEP (5) Connect the telephone set to the PHONE binding posts.



STEP (6) If an external modem is to be connected to the ASDI, determine if it is a 2-wire or 4-wire modem and connect it to the EXT MODEM binding posts.



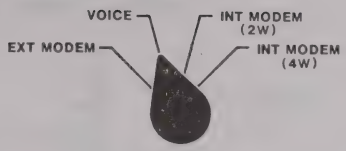
STEP (7) When data from teletype or crypto equipment is to be transmitted using the ASDI internal modem, the cable connections are made to the ASDI INT DATA MODEM INTERFACE connector utilizing interface cable W1 and cable W2. These cables are located in the cover of the ASDI transit case.



2-5. INITIAL SETTING AND SELF-TEST

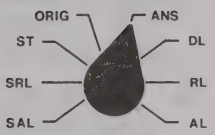
a. Initial Setting

Set the Communication Mode Switch to VOICE and Internal Modem Function Select Switch to ANS.



NOTE

These are the normal switch settings for voice communications.



b. Self-Test

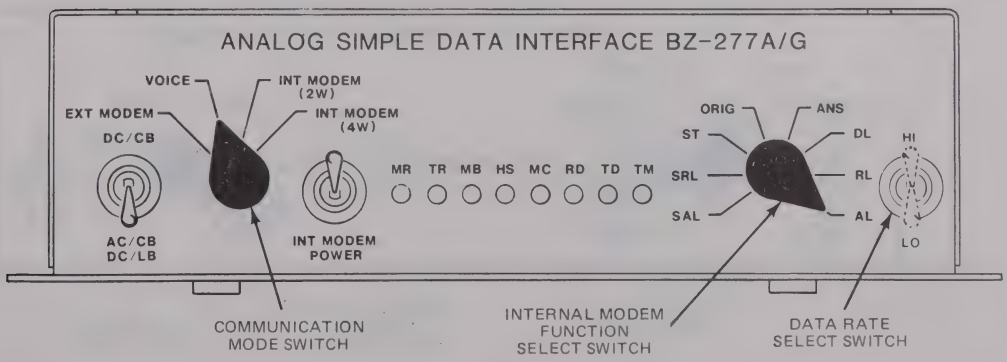
STEP ① ANALOG LOOPBACK - This self-test tests your ASDI in conjunction with your data terminal connected to INTERNAL DATA MODEM INTERFACE connector.

- Set the ASDI controls to the following positions in sequence given.

NOTE

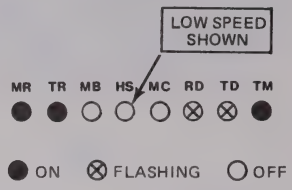
Your ASDI and your data terminal communication equipment must be configured for the same data rate (HI or LO).

Communication Mode Switch	-	VOICE
Internal Modem Function Select Switch	-	AL
Data Rate Select Switch	-	LO or HI
INT MODEM POWER	-	Up (on)



- Type any message at the data terminal and verify that the identical message is returned to the data terminal. Observe the ASDI Internal Modem Status Indicators for the following conditions:

  MR - On
  TR - On
  MB - Off
  HS - Off(LO) On(HI)
  MC - Off
  RD - Flashing
  TD - Flashing
  TM - On



- If ASDI Internal Modem Status Indicators are not correct or identical message is not returned to your data terminal, refer problem to higher level of maintenance.

- Set INT MODEM POWER switch to down (off).

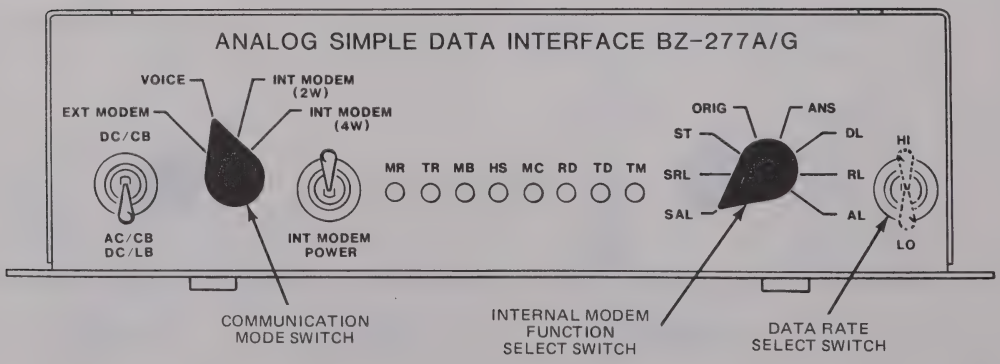
STEP (2) ALTERNATE ANALOG LOOPBACK - This self-test tests the internal pattern generator and transmit/receive function of your ASDI.

- Set the ASDI controls to the following positions in sequence given.

NOTE

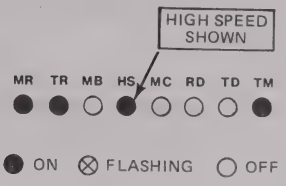
Your ASDI and your data terminal communication equipment must be configured for the same data rate (HI or LO).

Communication Mode Switch	-	VOICE
Internal Modem Function Select Switch	-	SAL
Data Rate Select Switch	-	HI or LO
INT MODEM POWER	-	Up (on)



- Observe Internal Modem Status Indicators for the following conditions:

  MR - On
  TR - On
  MB - Off
  HS - On(HI) Off(LO)
  MC - Flashing if error detected
  RD - Flashing
  TD - Flashing
  TM - On



- If MC indicator is flashing, refer problem to higher level of maintenance.

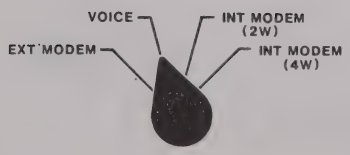
- Set INT MODEM POWER switch to down (off).

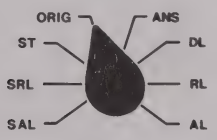
STEP ③ DIGITAL LOOPBACK - This self-test tests your ASDI receive/transmit function in conjunction with your data terminal and a remote ASDI receive/transmit function.

- Set your ASDI controls as follows:

  Communication Mode Switch - VOICE

  Internal Modem Function Select Switch - ORIG





- At your telephone, call operator at a remote ASDI and establish voice communications.
- Set your ASDI controls and tell remote ASDI operator to set controls to the following positions in sequence given.

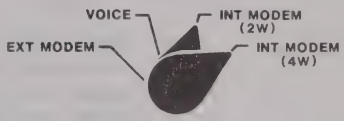
	Your ASDI	Remote ASDI
Internal Modem Function Select Switch	ANS	DL

NOTE

Your ASDI and your data terminal communication equipment must be configured for the same data rate (HI or LO).

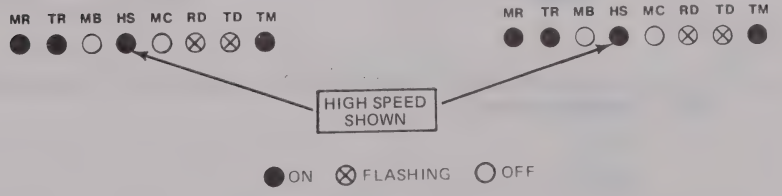
Data Rate Select Switch	HI or LO	Same as your ASDI

	Your ASDI	Remote ASDI
INT MODEM POWER	Up (On)	Up (On)
Communication Mode	INT MODEM (2W) or INT MODEM (4W) depending on telephone system being 2-wire or 4-wire	Same as your ASDI

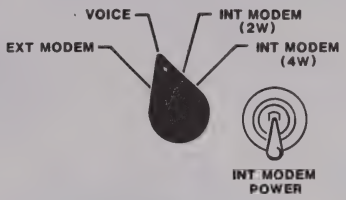


- Place telephone handset in holder cups on top of the ASDI.
- Type any message, a minimum of 200 characters, at your data terminal and verify that the identical message is returned to your terminal. Observe the Internal Modem Status Indicators on your ASDI and verify remote ASDI for the following conditions:

Your ASDI		Remote ASDI	
MR	On	MR	On
TR	On	TR	On
MB	Off	MB	Off
HS	On(HI) Off(LO)	HS	On(HI) Off(LO)
MC	Off	MC	Off
RD	Flashing	RD	Flashing
TD	Flashing	TD	Flashing
TM	Off	TM	On



- Set INT MODEM POWER switch to down (off) and Communication Mode Switch to VOICE at your ASDI and remote ASDI.



- Check voice communications and verify that Internal Modem Status Indicators were correct. If received typed message is not identical to transmitted message or indicators are not correct, refer problem to higher level of maintenance.

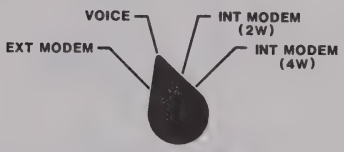
- Place telephone on-hook.

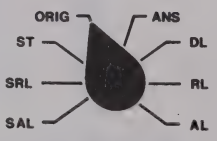
STEP ④ REMOTE DIGITAL LOOPBACK - This self-test tests your ASDI transmit/receive function. This test is done in conjunction with your data terminal. It also tests a remote ASDI receive/transmit function.

- Set your ASDI controls as follows:

  Communication Mode Switch - VOICE

  Internal Modem Function Select Switch - ORIG

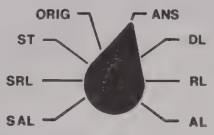




- At your telephone, call operator at a remote ASDI and establish voice communications.

- Set your ASDI controls and tell remote ASDI operator to set controls to the following positions in sequence given.

	Your ASDI	Remote ASDI
Internal Modem Function Select Switch	RL	ANS



	Your ASDI	Remote ASDI

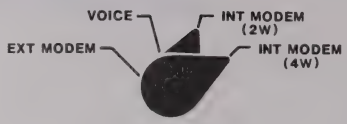
NOTE

Your ASDI and your data terminal communication equipment must be configured for the same data rate (HI or LO). This self-test can only be performed at high (HI) rate.

Data Rate Select Switch	HI (only)	HI (only)

INT MODEM POWER	Up (on)	Up (On)

	Your ASDI	Remote ASDI
Communication Mode Switch	INT MODEM (2W) or INT MODEM (4W) depending on telephone system being 2-wire or 4-wire	Same as your ASDI

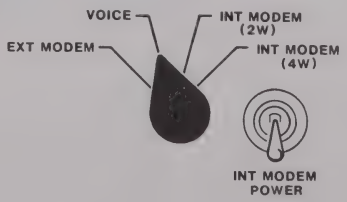


- Place telephone handset in holder cups on top of the ASDI.

- Type any message, a minimum of 200 characters, at your data terminal and verify that the identical message is returned to your terminal. Observe the Internal Modem Status Indicators on your ASDI and verify remote ASDI for the following conditions:

Your ASDI	Remote ASDI
MR - On	MR - On
TR - On	TR - On
MB - Off	MB - Off
HS - On	HS - On
MC - Off	MC - Off
RD - Flashing	RD - Flashing
TD - Flashing	TD - Flashing
TM - On	TM - On

- Set INT MODEM POWER switch to down (off) and Communication Mode Switch to VOICE at your ASDI and remote ASDI.



- Reestablish voice communications and verify that Internal Modem Status Indicators were correct. If received typed message or indicators were not correct, refer problem to higher level of maintenance.

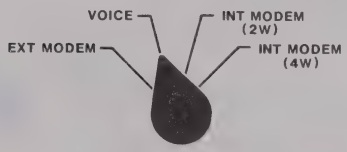
- Place telephone on-hook.

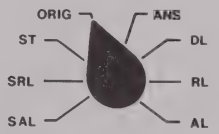
STEP ⑤ ALTERNATE REMOTE DIGITAL LOOPBACK - This self-test tests the internal modem pattern generator and transmit/receive function of your ASDI and transmit/receive function of a remote ASDI.

- Set your ASDI controls as follows:

  Communication Mode Switch - VOICE

  Internal Modem Function Select Switch - ORIG

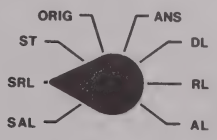


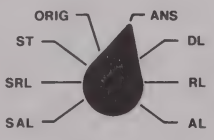


- At your telephone, call operator at a remote ASDI and establish voice communications.

- Set your ASDI controls and tell remote ASDI operator to set controls to the following positions in sequence given.

	Your ASDI	Remote ASDI
Internal Modem Function Select Switch	SRL	ANS

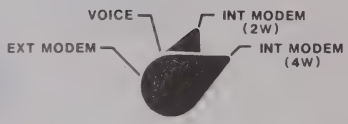




NOTE

Your ASDI and your data terminal communication equipment must be set for the same data rate (HI or LO).

	Your ASDI	Remote ASDI
Data Rate Select Switch	HI	HI
INT MODEM POWER	Up (on)	Up (on)
Communication Mode Switch	INT MODEM (2W) or INT MODEM (4W) depending on telephone system being 2-wire or 4-wire	Same as your ASDI



- Place handset in holder cups on top of the ASDI.

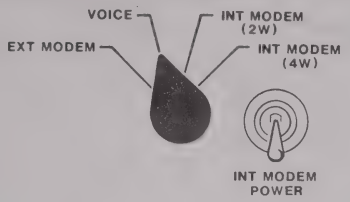
NOTE

Allow test duration of 15 seconds.

- Observe the Internal Modem Status Indicators on your ASDI and verify remote ASDI for the following conditions:

Your ASDI		Remote ASDI	
MR	On	MR	On
TR	On	TR	On
MB	Off	MB	Off
HS	On	HS	On
MC	Flashing if error detected	MC	Off
RD	Flashing	RD	Flashing
TD	Flashing	TD	Flashing
TM	On	TM	On

- After 15 seconds, at your ASDI and remote ASDI, set INT MODEM POWER switch to down (off) and Communication Mode Switch to VOICE.



- Reestablish voice communications and verify that Internal Modem Status Indicators were correct. If indicators were not correct and/or MC was flashing, refer problem to higher level of maintenance.

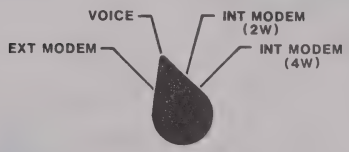
- Place telephone on-hook.

STEP (6) END-TO-END - This self-test tests the internal modem pattern generator and transmit/receive function of your ASDI and a remote ASDI.

- Set your ASDI controls as follows:

  Communication Mode Switch - VOICE

  Internal Modem Function Select Switch - ORIG



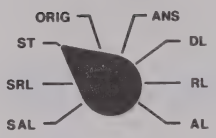
- At your telephone, call operator at a remote ASDI and establish voice communication.

- Set your ASDI controls and tell remote ASDI operator to set controls to the following positions.

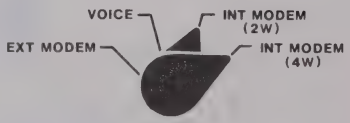
	Your ASDI	Remote ASDI
Data Rate Select Switch	HI or LO	HI or LO

	Your ASDI	Remote ASDI
INT MODEM POWER	Up (on)	Up (on)

Internal Modem Function Select Switch	ST	ST



Communication Mode Switch	INT MODEM (2W) or INT MODEM (4W) depending on telephone system being 2-wire or 4-wire	Same as your ASDI



- Place telephone handset in holder cups on top of the ASDI.

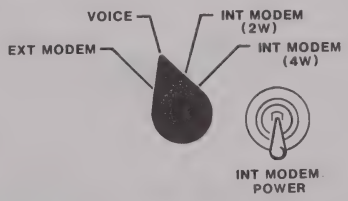
NOTE

Allow test duration of 15 seconds.

- Observe the Internal Modem Status Indicators on your ASDI and verify remote ASDI for the following conditions:

Your ASDI		Remote ASDI	
MR	On	MR	On
TR	On	TR	On
MB	Off	MB	Off
HS	On	HS	On
MC	Flashing if error detected	MC	Flashing if error detected
RD	Flashing	RD	Flashing
TD	Flashing	TD	Flashing
TM	On	TM	On

- After 15 seconds, at your ASDI and remote ASDI, set INT MODEM POWER switch to down (off) and Communication Mode Switch to VOICE.



- Check voice communications and verify that Internal Modem Status Indicators are correct. If indicators are not correct and/or MC is flashing, refer problem to higher level of maintenance.
- Place telephone on-hook.

2-6. OPERATING PROCEDURE

a. *Operating Modes*

The ASDI can be operated in the following modes:

- Voice communication
- Data communication utilizing external modem
- Data communication utilizing ASDI internal modem

b. Preliminary Control Settings

NOTE

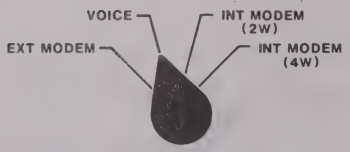
The preliminary control settings are the same settings required for voice communications. When the ASDI is in an idle condition, it should always be kept in this mode.

Control	Position
Supervisory Mode Switch	DC/CB or AC/CB-DC/LB depending upon supervisory switchboard power.

NOTE

The Supervisory Mode Switch position should only change if the supervisory switchboard power is changed.

Communication Mode Switch	VOICE



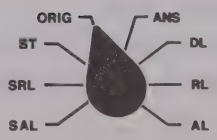
INT MODEM POWER	Down (off)

Internal Modem Function Select Switch

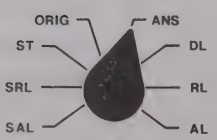
NOTE

Your ASDI and Remote ASDI must be in opposite positions (ANS/ORIG).

Your ASDI



Remote ASDI



Control	Position
Data Rate Select Switch	HI or LO

NOTE

Your ASDI and your data terminal communication equipment must be set for the same data rate (HI or LO).

c. Voice Communications

- For voice communications, there are no controls to operate on the ASDI. Operate the telephone in the normal manner.

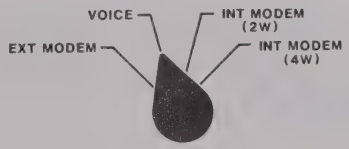
d. Data Communications Utilizing External Modem

- Receive or initiate a call and establish voice communication with remote ASDI operator.

- Set Communication Mode Switch to EXT MODEM and place telephone handset in holder cups on top of the ASDI.

- Operate data communication equipment, to receive and transmit data, in the normal manner.

- After finishing data communication, set Communication Mode Switch to VOICE and check voice communication.



- After finishing voice communication, replace telephone handset on-hook.

e. Data Communications Utilizing ASDI Internal Modem

- Receive or initiate a call and establish voice communications. Determine if data is to be communicated at high speed (1200 bps) (HI) or low speed (0-300 bps) (LO).

NOTE

Your ASDI, your data terminal communication equipment and your crypto equipment must be set for the same data rate (HI or LO).

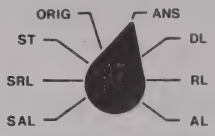
- Set Data Rate Select Switch to HI (high speed) or LO (low speed), as required.

- Set your ASDI and remote ASDI Communication Mode Switch to INT MODEM (2W) or INT MODEM (4W), as required.

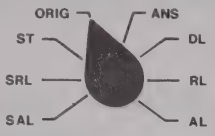
NOTE

Your ASDI and the remote ASDI Internal Modem Function Select Switch must not be in the same (ANS/ORIG) positions in order for data to be communicated.

- Set your ASDI Internal Modem Function Select switch to ORIG or ANS, making sure the remote ASDI is set to the opposite position.



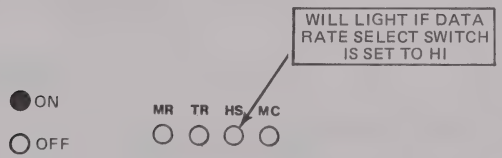
AND



- Place telephone handset in cups on top of the ASDI.

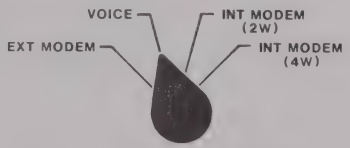
- Set your ASDI and remote ASDI INT MODEM POWER switch to up (on).

- Observe that Internal Modem Status Indicators MR, TR, MC and HS (if HI (high speed selected) at your ASDI and remote ASDI light.



- When Internal Model Status Indicator MC goes off and your crypto equipment has synchronized, operate data communication equipment in normal manner to transmit and receive data. Internal Modem Status Indicators RD and TD will flash.

- After finishing data communications at your ASDI and remote ASDI, set Communication Mode Switch to VOICE and INT MODEM POWER switch to down (off). Check voice communications.



- After finishing voice communications, place telephone handset on-hook.

CHAPTER 3
ORGANIZATIONAL MAINTENANCE

SECTION I. REPAIR PARTS, SPECIAL TOOLS, TMDE AND SUPPORT EQUIPMENT

3-1. COMMON TOOLS AND EQUIPMENT

As contained in Tool Kit, Electronic Equipment TK-101/G.

3-2. SPECIAL TOOLS, TMDE AND SUPPORT EQUIPMENT

No special tools are required.

Multimeter AN/PSM-45 is required.

No support equipment is required.

3-3. REPAIR PARTS

Repair parts are listed and illustrated in Repair Parts and Special Tools List, Appendix C of this technical manual.

SECTION II. SERVICE UPON RECEIPT

3-4. SERVICE UPON RECEIPT OF MATERIAL

UNPACKING

There are no special unpacking procedures for the ASDI. Avoid damaging the transit case during unpacking, it will be used for reshipment. Report the empty transit case through supply channels.

CHECK UNPACKED EQUIPMENT

- Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage on SF364, Report of Discrepancy.

- Check the equipment against the packing slip to see if the shipment is complete. Report all discrepancies in accordance with the instructions of DA Pam 738-750.
- Check to see whether the equipment has been modified.

3-5. INSTALLATION INSTRUCTIONS

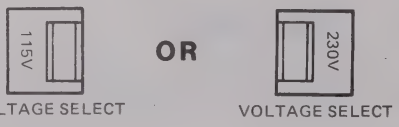
Complete installation instructions are provided in paragraph 2-4 of this technical manual.

3-6. PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT

CAUTION

If the ASDI is not set properly for source power to be used (115V or 230V), damage will result.

Turn off source power. At the rear of the ASDI, set VOLTAGE SELECT switch, as required, to match source power. Slide to right for 115V and to left for 230V.



SECTION III. TROUBLESHOOTING PROCEDURES

3-7. OPERATIONAL CHECK

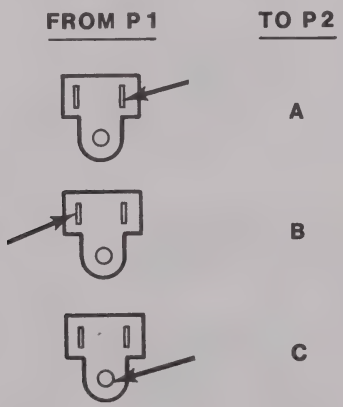
a. When troubles are encountered during communications, check for proper ASDI controls (para 2-5*a* and 2-6*b*) and proper installation connections (para 2-4).

b. When troubles are encountered during data communications, perform ASDI self-tests as contained in paragraph 2-5.

3-8. SYMPTOM INDEX

The following troubleshooting information is a systematic approach to correcting problems encountered during operation of the ASDI. Read each SYMPTOM. Choose the SYMPTOM or SYMPTOMS that closest match the operational problem. Perform the CORRECTIVE ACTION for each SYMPTOM. Follow the step-by-step instructions given. Always ensure that the telephone system, data communication equipments and path interconnections are operational.

SYMPTOM	CORRECTIVE ACTION
a. No power to ASDI	1. Verify prime power is available to the ASDI. If OK, proceed to 2. 2. Check .50 AMP fuse at rear of ASDI. If bad, replace. If OK, proceed to 3. 3. Using a multimeter, check continuity of cable W3.



If continuity does not exist, replace cable W3. If OK, replace ASDI.

b. ASDI will not operate in voice communications mode.	Replace ASDI.
c. ASDI will not operate in data communications modes.	Proceed to next symptom.
d. Failed analog loopback self test.	Check continuity of cables W1 and W2.

SYMPTOM	CORRECTIVE ACTION

Cable W1

From	To
P1-1	P2-S
P1-1	P2-N
P1-1	P2-B
P1-2	P2-T
P1-3	P2-U
P1-6	P2-G
P1-7	P2-H
P1-8	P1-4
P1-11	P2-Y
P1-16	P2-P
P1-17	P2-K
P1-18	P2-L
P1-19	P2-W
P1-21	P2-A
	*P2-V
	*P2-X

Cable W2

From	To
P1-1	P2-7
P1-2	P2-1
P1-12	P2-3
P1-14	P2-2
P1-18	P2-7
P1-19	P2-17
P1-21	P2-15
P1-27	P2-5
P1-27	P1-29
P1-29	P2-20
P1-32	P2-24
P1-35	P2-8

*Jumpered

If no continuity, replace cables. If OK, replace ASDI.

e. Failed alternate analog loopback self test. — Replace ASDI.

f. Failed digital loopback self test and analog loopback self test was good. — Trouble is at remote ASDI.

g. Failed remote digital loopback self test and analog self test was good. — Trouble is at remote ASDI.

h. Failed alternate remote digital loopback and alternate analog loopback self test was good. — Trouble is at remote ASDI.

i. Failed end-to-end self test and alternate analog self test was good. — Trouble is at remote ASDI.

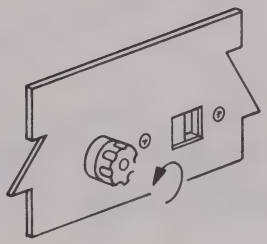
SECTION IV. MAINTENANCE PROCEDURES

3-9. GENERAL

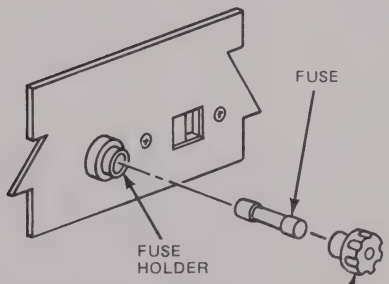
Organizational maintenance is limited to the replacement of the .50 fuse, binding post rubber boots, power and interface cables, fuse holder cap and switch knobs.

3-10. .50 FUSE AND FUSE CAP REPLACE

a. Set INT MODEM POWER switch to down (off).



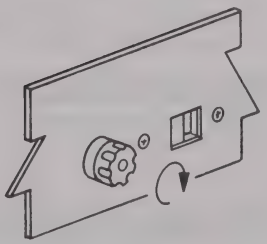
b. Push in and rotate fuse cap 1/4-turn counterclockwise.



c. Pull the cap and fuse from the fuse holder. Remove and discard old fuse from fuse cap.

CAUTION

Install only .50 ampere fuse.

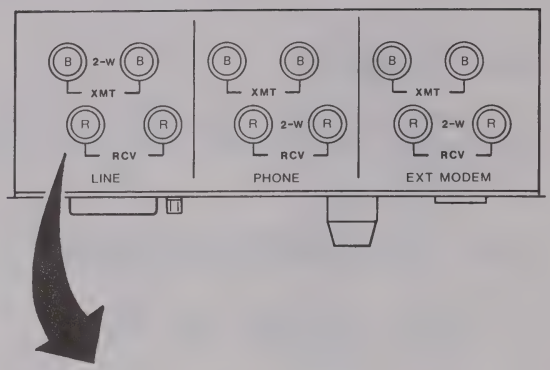


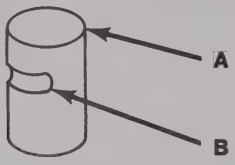
d. Install new fuse in fuse cap. Replace fuse cap by pressing inward and rotating 1/4-turn clockwise.

3-11. BINDING POST RUBBER BOOT REPLACE

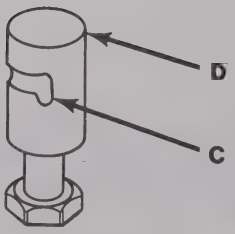
a. Tag and remove wires attached to binding post.

b. Twist off each damaged binding post rubber boot. Use only as much force as is necessary.





c. Place the correct color rubber boot (A) on the binding post (D).



d. Slowly turn the rubber boot to align its slot (B) with the slot (C) on the binding post.

e. Use finger pressure to force the new rubber boot on the binding post.

f. Reconnect any removed wires to the binding post.

3-12. POWER CABLE W3 AND INTERFACE CABLES W1 AND W2

No special procedures are required for replacement of cables. Refer to Chapter 2 for proper cable hookup.

3-13. SWITCH KNOB REPLACE

NOTE

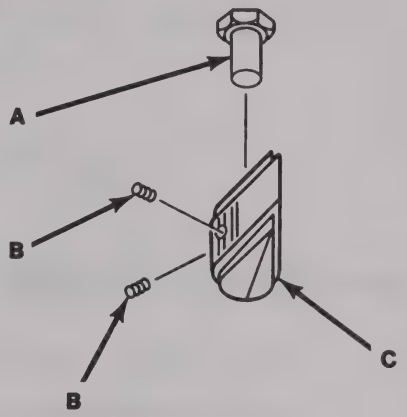
These steps apply to replacing the knobs on the Communication Mode Switch and the Internal Modem Function Select Switch.

a. Record the position of the switch knob. Use a hex wrench (size 3/64 inch) to loosen two screws (B) by turning them counterclockwise. Pull out old knob C to remove it from switch shaft (A).

b. Back out the two screws in new knob (C) until they cannot be seen in the hole inside the knob by turning them counter-clockwise.

c. Place new knob (C) all the way down on shaft A and position the knob as recorded in step *a* above.

d. Without rotating knob (C), tighten two screws (B) by turning them clockwise.



SECTION V. PREPARATION FOR STORAGE OR SHIPMENT

3-14. PREPARATION FOR STORAGE

a. Inspect the ASDI and its cables for signs of damage, deterioration and completeness. Make all necessary repairs.

b. All deficiencies must be corrected including the completion of current modification work orders (MWO's).

CAUTION

Do not use solvents to clean any part of the ASDI.

c. Using a clean, dry, lint-free cloth, clean the ASDI and its cables. For dirty areas, moisten the cloth with clear water and dry thoroughly with a dry cloth.

d. Refer to the illustration in paragraph 1-10 and pack the ASDI in its transit case. Securely close the transit case latches.

NOTE

The above steps apply to all types of storage.

3-15. PREPARATION FOR SHIPMENT

a. Preservation, Packaging and Packing

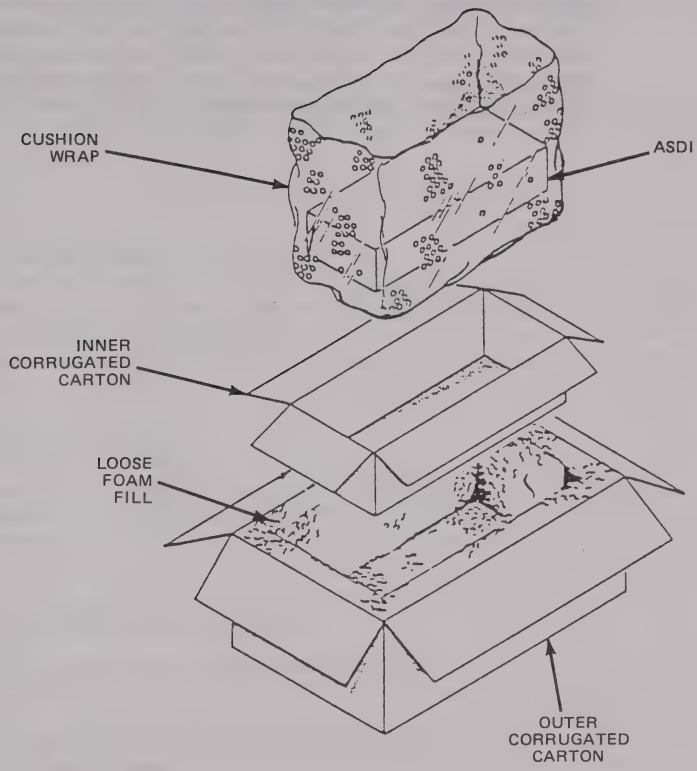
- Perform Preparation for Storage procedures contained in paragraph 3-14.
- Package the ASDI as shown in the following illustration.

b. Marking

(1) The outer carton of shipment must contain a destination shipping label. In addition to the shipping label, and as a separate item, the outer carton must contain a packing list describing the contents of the shipment.

(2) Prior to packaging, check the equipment log, the ASDI, and Department of the Army Pamphlet DA Pam 25-30. Specific check points are as follows:

(a) Check the ASDI to determine that it is complete. Report any shortages in accordance with Technical Manual DA Pam 738-750. Also, list the missing components on the packing list, and the discrepant material report.


CUSHION WRAP
ASDI
INNER CORRUGATED CARTON
LOOSE FOAM FILL
OUTER CORRUGATED CARTON

(b) Check the ASDI status with respect to modification work orders (MWO). If the ASDI has been modified, the MWO number will appear near the nomenclature plate. The MWO number and appropriate notations should be entered in the equipment log. Current MWO's applicable to the ASDI are listed in DA Pam 25-30. If a MWO is applicable, and has not been applied, this fact shall be presented on the discrepant materiel report. (The discrepant materiel report shall accompany the ASDI.)

APPENDIX A
REFERENCES

A-1. Scope

This appendix lists forms, technical manuals, and miscellaneous publications referenced in this manual.

A-2. Forms

Recommended Changes to Publications and Blank Forms ..... DA Form 2028
Discrepancy in Shipment Report (DISREP) ..... SF 361
Packaging Improvement Report ..... SF 364
Quality Deficiency Report ..... SF 368

A-3. Technical Manuals

Procedure for Destruction of Electronics Materiel to Prevent Enemy Use (Electronics Command) ..... TM 750-244-2

A-4. Miscellaneous Publications

The Army Maintenance Management System (TAMMS) ..... DA PAM 738-750

Consolidated Index of Army Publications and Blank Forms..... DA PAM 25-30

First Aid for Soldiers ..... FM 21-11

APPENDIX B
MAINTENANCE ALLOCATION CHART

SECTION I. INTRODUCTION

B-1. GENERAL

This appendix provides a summary of the maintenance operations for Analog Simple Data Interface BZ-277A/G. It authorizes categories of maintenance for specified maintenance functions on repairable items and components and the tools and equipment required to perform each function. This appendix may be used as an aid in planning maintenance operations.

B-2. MAINTENANCE FUNCTION

Maintenance functions will be limited to and defined as follows:

a. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination.

b. Test. To verify serviceability and to detect incipient failure by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. Service. Operations required periodically to keep an item in proper operating condition, i.e., to clean (decontaminate), to preserve, to drain, to paint, or to replenish fuel, lubricants, hydraulic fluids, or compressed air supplies.

d. Adjust. To maintain, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to the specified parameters.

e. Align. To adjust specified variable elements of an item to bring about optimum or desired performance.

f. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test measuring and diagnostic equipments used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. Install. The act of emplacing, seating, or fixing into position an item, part, module (component or assembly) in a manner to allow the proper functioning of the equipment or system.

h. Replace. The act of substituting a serviceable like type part, subassembly, or module (component or assembly) for an unserviceable counterpart.

i. Repair. The application of maintenance services (inspect, test, service, adjust, align, calibrate, replace) or other maintenance actions (welding, grinding, riveting, straightening, facing, remachining, or resurfacing) to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

j. Overhaul. That maintenance effort (service/action) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards (i.e., DMWR) in appropriate technical publication. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

k. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of material maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours, miles, etc.) considered in classifying Army equipments/components.

B-3. COLUMN ENTRIES

a. Column 1, Group Number. Column 1 lists group numbers, the purpose of which is to identify components, assemblies, subassemblies, and modules with the next higher assembly.

b. Column 2, Component/Assembly. Column 2 contains the noun names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. Column 3, Maintenance Functions. Column 3 lists the functions to be performed on the item listed in column 2.

d. Column 4, Maintenance Level. Column 4 specifies by the listing of a "worktime" figure in the appropriate subcolumn(s), the lowest level of maintenance authorized to perform the function listed in column 3. This figure represents the active time required to perform that maintenance function at the indicated category of maintenance. If the number of complexity of the tasks within the listed maintenance function vary at different maintenance categories, appropriate "worktime" figures will be shown for each category. The number of task-hours specified by the "worktime" figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation time, troubleshooting time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. Subcolumns of column 4 are as follows:

C Operator/crew

O Unit

F Intermediate Direct Support

H Intermediate General Support

L Special Repair Activity (SRA)

D Depot

e. Column 5, Tools and Equipment. Column 5 specifies by code, those common tool sets, (not individual tools) and special tools, test, and support equipment required to perform the designated function.

f. Column 6, Remarks. Column 6 contains an alphabetical code which leads to the remark in Section IV, Remarks, which is pertinent to the item opposite the particular code.

B-4. TOOL AND TEST EQUIPMENT REQUIREMENTS (SECTION III)

a. Tool or Test Equipment Reference Code. The numbers in this column coincide with the numbers used in the tools and equipment column of the MAC. The numbers indicate the applicable tool or test equipment for the maintenance functions.

b. Maintenance Level. The codes in this column indicate the maintenance category allocated the tool or test equipment.

c. Nomenclature. This column lists the noun name and nomenclature of the tools and test equipment required to perform the maintenance functions.

d. National/NATO Stock Number. This column lists the National/NATO stock number of the specific tool or test equipment.

e. Tool Number. This column lists the manufacturer's part number of the tool followed by the Federal Supply Code for manufacturers (5-digit) in parentheses.

B-5. REMARKS (SECTION IV)

a. Reference Code. This code refers to the appropriate item in Section II, Column 6.

b. Remarks. This column provides the required explanatory information necessary to clarify items appearing in Section II.

SECTION II.
MAINTENANCE ALLOCATION CHART FOR ANALOG SIMPLE DATA INTERFACE BZ-277A/G

(1) GROUP NUMBER	(2) COMPONENT / ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQPT.	(6) REMARKS
			UNIT		INTERMEDIATE		DEPOT		
			C	O	F	H	D		
00	ANALOG SIMPLE DATA INTERFACE BZ-277A/G	Inspect	0.1						A
		Test		0.2				1	B
		Replace		0.1					
		Repair		0.1				2	C
		Repair					#		D

SECTION III.
TOOL AND TEST EQUIPMENT REQUIREMENTS FOR ANALOG SIMPLE DATA INTERFACE BZ-277A/G

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE LEVEL	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
1	O	MULTIMETER, AN/PSM-45	6625-01-139-2512	
2	O	TOOL KIT, ELECTRONIC EQUIPMENT TK-101/G	5180-00-064-5178	

SECTION IV.
REMARKS

REFERENCE CODE	REMARKS
A	Visual inspection
B	Perform continuity checks of cables
C	Repair by replacing the fuse, switch knob, cables, terminal boots and fuse holder cap
D	Repair by contractor

APPENDIX C
ORGANIZATIONAL REPAIR PARTS AND SPECIAL TOOLS LIST

SECTION I. INTRODUCTION

C-1. SCOPE

This appendix lists and authorizes spares and repair parts; special tools; special test, measurement, and diagnostic equipment (TMDE); and other special support equipment required for performance of organizational maintenance of the BZ-277A/G. It authorizes the requisitioning, issue, and disposition of spares, repair parts and special tools as indicated by the source, maintenance and recoverability (SMR) codes.

C-2. GENERAL

This Repair Parts and Special Tools List is divided into the following sections:

a. Section II. Repair Parts List. A list of spares and repair parts authorized by this RPSTL for use in the performance of maintenance. The list also includes parts which must be removed for replacement of the authorized parts. Parts lists are composed of functional groups in ascending numeric sequence, with the parts in each group listed in ascending item number sequence. Figure numbers are listed directly beneath the group header.

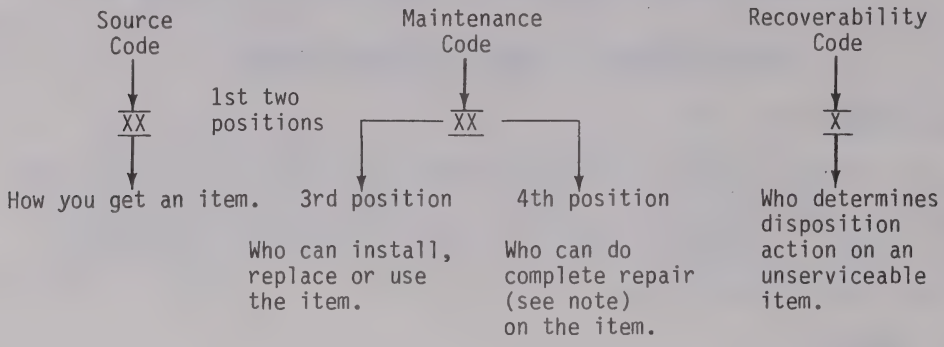
b. Section III. Special Tools List. Not applicable.

c. Section IV. National Stock Number and Part Number Index. A list, in National item identification number (NIIN) sequence, of all National Stock numbered items appearing in the listings, followed by a list in alphameric sequence of all part numbers appearing in the listings. National stock numbers and part numbers are cross-referenced to each illustration figure and item number appearance.

C-3. EXPLANATION OF COLUMNS (SECTIONS II AND III).

a. Item No. (Column (1)). Indicates the number used to identify items called out in the illustration.

b. SMR Code (Column (2)). The Source, Maintenance, and Recoverability (SMR) code is a 5-position code containing supply/requisitioning information, maintenance category authorization criteria, and disposition instruction, as shown in the following breakout:



NOTE

Complete Repair: Maintenance capacity, capability, and authority to perform all corrective maintenance tasks of the "Repair" function in a use/user environment in order to restore serviceability to a failed item.

(1) Source Code. The source code tells you how to get an item needed for maintenance, repair, or overhaul of an end item/equipment. Explanations of source codes follows:

Code	*Explanation*
PA PB PC PD PE PF PG	Stocked items; use the applicable NSN to request/ requisition items with these source codes. They are authorized to the category indicated by the code entered in the third position of the SMR code.

NOTE

Items coded PC are subject to deterioration.

KD KF KB	Items with these codes are not to be requested/requisitioned individually. They are part of a kit which is authorized to the maintenance category indicated in the third position of the SMR code. The complete kit must be requistioned and applied.

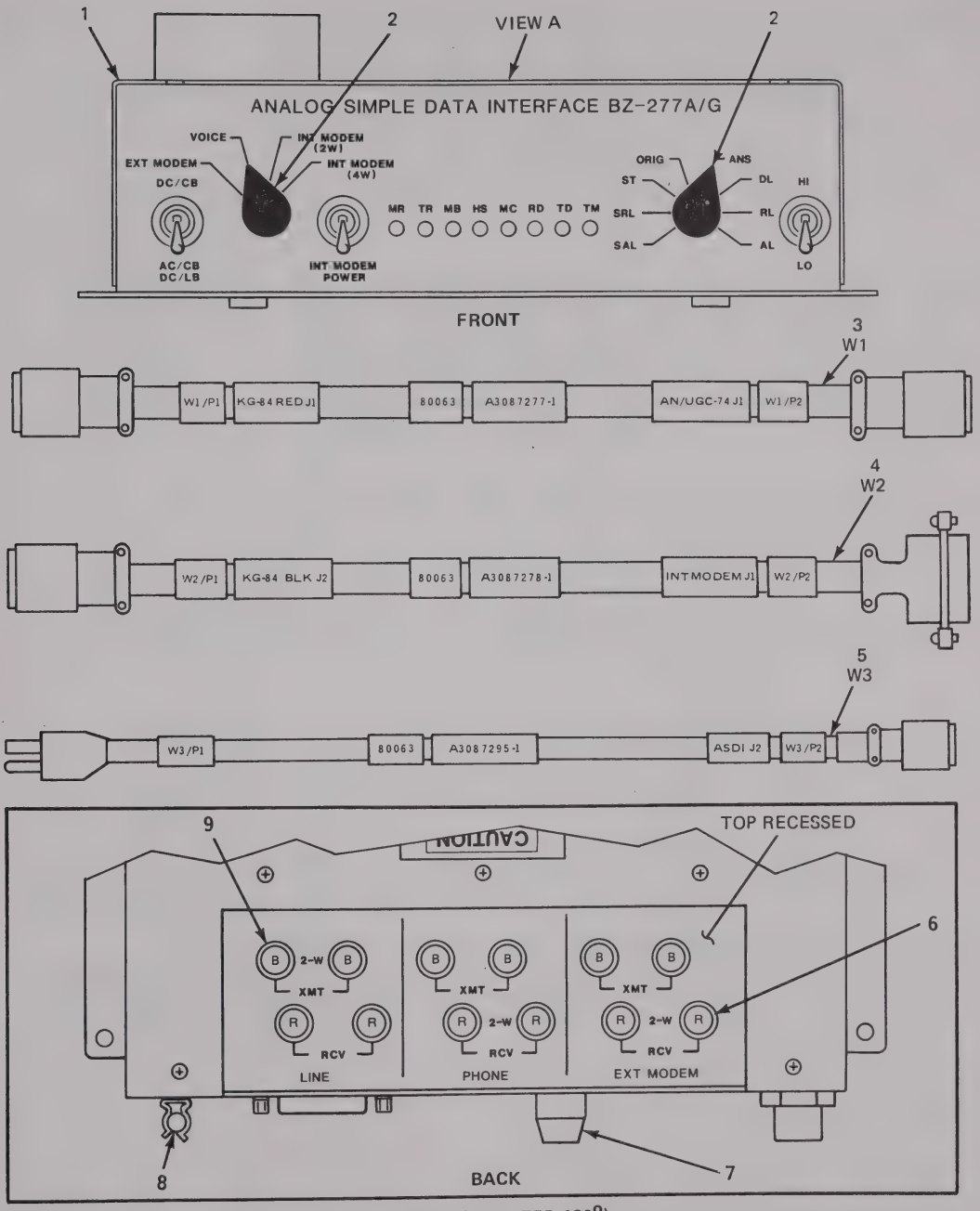


Figure C-1. Analog Simple Data Interface BZ-277A/G

MO-Made at org/ AVUM category
MF-Made at DS/ AVUM category
MH-Made at GS category
ML-Made at Specialized Repair Activity (SRA)
MD-Made at Depot

Items with these codes are not to be requested/requisitioned individually. They must be made from bulk material which is identified by the part number in the description and usable on code (UOC) column and listed in the Bulk Material group of the repair parts list. If the item is authorized to you by the third position code of the SMR code, but the source code indicates it is made at a higher category, order the item from the higher category of maintenance.

AO-Assembled by org/ AVUM category
AF-Assembled by DS/ AVIM category
AH-Assembled by GS category
AL-Assembled by SRA
AD-Assembly by Depot

Items with these codes are not to be requested/requisitioned individually. The parts that make up the assembled item must be requisitioned or fabricated and assembled at the category of maintenance indicated by the source code. If the third position code of the SMR code authorizes you to replace the item, but the source code indicates the item is assembled at a higher category, order the item from the higher category of maintenance.

XA - Do not requisition an "XA" coded item. Order its next higher assembly.
XB - If an "XB" item is not available from salvage, order it using the FSCM and part number given.
XC - Installation drawing, diagram, instruction sheet, field service drawing, that is identified by manufacturers part number.
XD - Item is not stocked. Order an "XD" coded item through normal supply channels using the FSCM and part number given, if no NSN is available.

NOTE

Cannibalization or controlled exchange, when authorized, may be used as a source of supply for items with the above source codes, except for those source coded "XA" or those aircraft support items restricted by requirements of AR 750-1.

(2) Maintenance Code. Maintenance codes tell you the category of maintenance authorized to USE and REPAIR support items. The maintenance codes are entered in the third and fourth positions of the SMR Code as follows:

(a) The maintenance code entered in the third position tells you the lowest maintenance level authorized to remove, replace, and use an item. The maintenance code entered in the third position will indicate authorization to one of the following categories of maintenance.

Code *Application/Explanation*

C - Crew or operator maintenance done within organizational or aviation maintenance.
O - Organizational or aviation unit category can remove, replace, and use the item.
F - Direct support or aviation intermediate category can remove, replace, and use the item.
H - General support cateogry can remove, replace, and use the item.
L - Specialized repair activity can remove, replace and use the item.
D - Depot category can remove, replace, and use the item.

(b) The maintenance code entered in the fourth position tells whether or not the item is to be repaired and identifies the lowest maintenance category with the capability to do complete repair (i.e., perform all authorized repair functions). This position will contain one of the following maintenance codes.

NOTE

Some limited repair may be done on the item at a lower category of maintenance, if authorized by the Maintenance Allocation Chart (MAC) and SMR codes.

Code *Application/Explanation*

O - Organizational or aviation unit is the lowest category that can do complete repair of the item.
F - Direct support or aviation intermediate is the lowest category that can do complete repair of the item.
H - General support is the lowest category that can do complete repair of the item.
L - Specialized repair activity (designate the specialized repair activity) is the lowest category that can do complete repair of the item.
D - Depot is the lowest category that can do complete repair of the item.
Z - Nonreparable. No repair is authorized.
B - No repair is authorized. (No parts or special tools are authorized for the maintenance of a "B" coded item.) However, the item may be reconditioned by adjusting, lubricating, etc., at the user category.

(3) Recoverability Code. Recoverability codes are assigned to items to indicate the disposition action on unserviceable items. The recoverability code is entered in the fifth position of the SMR Code as follows:

Recoverability codes	*Application/Explanation*
Z	Nonreparable item. When unserviceable, condemn and dispose of the item at the level of maintenance shown in third position of SMR Code.
O	Reparable item. When uneconomically reparable, condemn and dispose of the item at organizational or aviation unit category.
F	Reparable item. When uneconomically reparable, condemn and dispose of the item at the direct support or aviation intermediate category.
H	Reparable item. When uneconomically reparable, condemn and dispose of the item at general support category.
D	Reparable item. When beyond lower level repair capability, return to depot. Condemnation and disposal of item not authorized below depot category.
L	Reparable item. Condemnation and disposal not authorized below specialized repair activity (SRA).
A	Item requires special handling or condemnation procedures because of specific reasons (e.g., precious metal content, high dollar value, critical material, or hazardous material). Refer to appropriate manuals/directives for specific instructions.

c. FSCM (Column (3)). The Federal Supply Code for Manufacturer (FSCM) is a 5-digit numeric code which is used to identify the manufacturer, distributor, or Government agency, etc., that supplies the item.

d. Part Number (Column (4)). Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards, and inspection requirements to identify an item or range of items.

NOTE

When you use an NSN to requisition an item, the item you receive may have a different part number from the part ordered.

e. Description and Usable on Code (UOC) (Column (5)). This column includes the following information.

(1) The Federal item name and, when required, a minimum description to identify the item.

(2) The statement "END OF FIGURE" appears just before the last item description in Column (5) for a given figure in both section II and III.

f. Qty (Column (6)). Indicates the quantity of the item used in the breakout shown on the illustration figure, which is prepared for a functional group, subfunctional group, or an assembly. A "V" appearing in this column in lieu of a quantity indicates that the quantity is variable and the quantity may vary from application to application.

C-4. EXPLANATION OF COLUMNS (SECTION IV)

a. National Stock Number (NSN) Index.

(1) Stock Number column. This column lists the NSN by National item identification number (NIIN) sequence. The NIIN consists of the last nine digits of the NSN. When using this column to locate an item, ignore the first four digits of the NSN. When requisitioning items use the complete NSN (13 digits).

(2) Fig. column. This column lists the number of the figure where the item is identified/located. The illustrations are in numerical sequence in Section II and Section III.

(3) Item column. The item number identifies the item associated with the figure listed in the adjacent Fig. column. This item is also identified by the NSN listed on the same line.

b. Part Number Index. Part numbers in this index are listed by part number in ascending alphameric sequence.

(1) FSCM column. This column lists the Federal supply code for manufacturer (FSCM).

(2) Part number column. This column indicates the part number assigned to the item.

(3) Stock number column. This column lists the National stock number for the associated part number and manufacturer identified in the part number and FSCM columns to the left.

(4) Fig. column. This column lists the number of the figure where the item is identified/located in Section II and III.

(5) Item column. The item number is that number assigned to the item as it appears in the figure referenced in the adjacent figure number column.

C-5. SPECIAL INFORMATION.

National stock numbers (NSN's) that are missing from P source coded items have been applied for and will be added to this TM by future change/revision when they are entered in the Army Master Data File (AMDF). Until the NSN's are established and published, submit exception requisitions to: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-MM, Fort Monmouth, NJ 07703-5000 for the part required to support your equipment.

C-6. HOW TO LOCATE REPAIR PARTS

a. When National stock number or part number is not known.

(1) First. Using the table of contents, determine the assembly group or subassembly group to which the item belongs. This is necessary since figures are prepared for assembly groups and subassembly groups, and listings are divided into the same groups.

(2) Second. Find the figure covering the assembly group or subassembly group to which the item belongs.

(3) Third. Identify the item on the figure and note the item number.

(4) Fourth. Refer to the Repair Parts List for the figure to find the part number for the item number noted on the figure.

(5) Fifth. Refer to the Part Number Index to find the NSN, if assigned.

b. When National stock number or part number is known.

(1) First. Using the Index of National stock numbers and part numbers, find the pertinent National stock number or part number. The NSN index is in National item identification number (NIIN) sequence (para. 4a(1)). The part numbers in the Part Number index are listed in ascending alphanumeric sequence (para 4b). Both indexes cross-reference you to the illustration figure and item number of the item you are looking for.

(2) Second. After finding the figure and item number, verify that the item is the one you're looking for, then locate the item number in the repair parts list for the figure.

C-7. ABBREVIATIONS

Not applicable.

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 00 ANALOG SIMPLE DATA INTERFACE ASSEMBLY	
				FIGURE C-1	
1	PDODD	80063	A3087272-1	SIMPLE DATA INTERFA.....	1
2	PAOZZ	96906	MS91528-1P2B	KNOB.....	2
3	XBOZZ	80063	A3087277-1	CABLE ASSY.....	1
4	XBOZZ	80063	A3087278-1	CABLE ASSY.....	1
5	XBOZZ	80063	A3087295-1	CABLE ASSY, POWER.....	1
6	PAOZZ	72825	9766-25-4	CAP,ELECTRICAL.....	1
7	PAOZZ	75915	FHN20G	FUSEHOLDER,EXTRACTO.....	1
8	PAOZZ	75915	313-500	FUSE 3AG (SLO-BLO).....	2
9	PAOZZ	72825	9766-25-3	BOOT, RUBBER, BLK.....	1
				END OF FIGURE	

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CROSS-REFERENCE INDEXES

NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
5999-00-532-1067	C-1	9			
5355-00-616-9604	C-1	2			
5920-01-040-1723	C-1	7			
5999-01-184-0737	C-1	6			
5895-01-259-9236	C-1	1			

CROSS-REFERENCE INDEXES

PART NUMBER INDEX

FSCM	PART NUMBER	STOCK NUMBER	FIG.	ITEM
80063	A3087272-1	5895-01-259-9236	C-1	1
80063	A3087277-1		C-1	3
80063	A3087278-1		C-1	4
80063	A3087295-1		C-1	5
75915	FHN20G	5920-01-040-1723	C-1	7
96906	MS91528-1P2B	5355-00-616-9604	C-1	2
75915	313-500		C-1	8
72825	9766-25-3	5999-00-532-1067	C-1	9
72825	9766-25-4	5999-01-184-0737	C-1	6

APPENDIX D
COMPONENT OF END ITEM AND BASIC ISSUE ITEMS LISTS

SECTION 1. INTRODUCTION

D-1. SCOPE

This appendix lists components of end item and basic issue items for the ASDI to help you inventory items required for safe and efficient operation.

D-2. GENERAL

The Components of End Item and Basic Issue Items Lists are divided into the following sections:

a. Section II. Components of End Item. This listing is for informational purposes only, and is not authority to requisition replacements. These items are part of the end item, but are removed and separately packaged for transportation or shipment. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Illustrations are furnished to assist you in identifying the items.

b. Section III. Basic Issue Items. Not applicable.

D-3. EXPLANATION OF COLUMNS

The following provides an explanation of columns found in the tabular listings.

a. Column (1) - Illustration Number (Illus Number). This column indicates the number of the illustration in which the item is shown.

b. Column (2) - National Stock Number. Indicates the National stock number assigned to the item and will be used for requisitioning purposes.

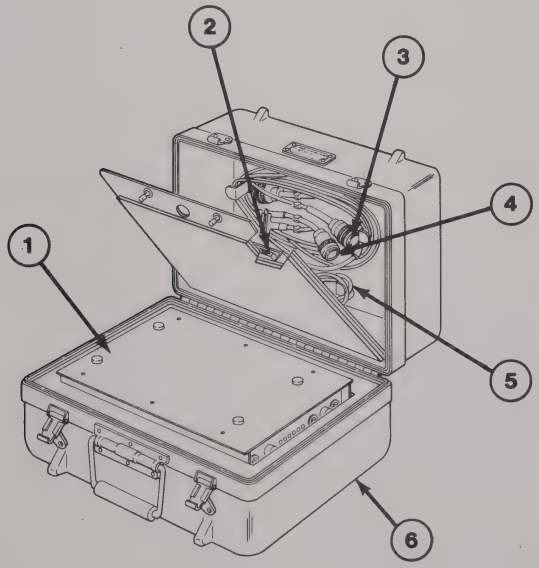
c. Column (3) - Description. Indicates the Federal item name and, if required, a minimum description to identify and locate the item. The last line for each item indicates the FSCM (in parentheses) followed by the part number. If item needed differs for different models of this equipment, the model would be shown under the "Usable On" heading in this column.

d. Column (4) - Unit of Measure (U/M). Indicates the measure used in performing the actual operation/maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr).

e. Column (5) - Quantity required (Qty Reqd). Indicates the quantity of the item authorized to be used with/on the equipment.

SECTION II. COMPONENTS OF END ITEM

(1) ILLUS NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION (FSCM) AND PART NUMBER	USABLE ON CODE	(4) U/M	(5) QTY REQD
1		Analog Simple Data Interface (80063) A3087272-1		EA	1
2		Technical Manual (80063) TM 11-5895-1388-12&P		EA	1
3		Cable Assembly W1 (80063) A3087277-1		EA	1
4		Cable Assembly W2 (80063) A3087278-1		EA	1
5		Cable Assembly W3 (80063) A3087295-1		EA	1
6		Transit Case (31196) A3087296-1		EA	1



SECTION III. BASIC ISSUE ITEMS

Not applicable

APPENDIX E
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Not applicable

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10 July 1975

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 11-5840-340-12	23 Jan 74	Radar Set AN/PRC-76

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PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO	IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:
2-25	2-28			Recommend that the installation antenna alignment procedure be changed throughout to specify a 2° IFF antenna lag rather than 1°. REASON: Experience has shown that with only a 1° lag, the antenna servo system is too sensitive to wind gusting in excess of 25 knots, and has a tendency to rapidly accelerate and decelerate as it hunts, causing strain to the drive train. Hunting is minimized by adjusting the lag to 2° without degradation of operation.
3-10	3-3		3-1	Item 5, Function column. Change "2 db" to "3db." REASON: The adjustment procedure for the TRANS POWER FAULT indicator calls for a 3 db (500 watts) adjustment to light the TRANS POWER FAULT indicator.
5-6	5-8			Add new step f.1 to read, "Replace cover plate removed in step e.1, above." REASON: To replace the cover plate.
		F03		Zone C 3. On J1-2, change "+24 VDC to "+5 VDC." REASON: This is the output line of the 5 VDC power supply. +24 VDC is the input voltage.

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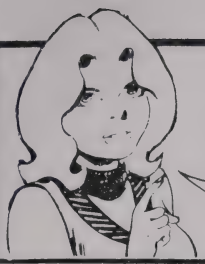

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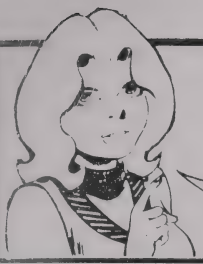

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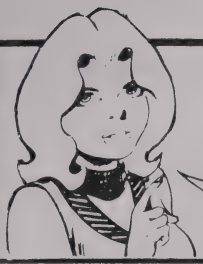

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